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ABSTRACT

This article asserts that a significant number of schoolchildren and teachers in the United States are exposed on an almost daily basis to environmental hazards including volatile organic chemicals, airborne lead and asbestos, and noise pollution while they are at school. Some school hazards are linked to the aging of many of the nation's schools, to the ongoing siting of schools in close proximity to contaminated waste sites, and to the burgeoning population of school-age children that has forced financially constrained school districts to use portable classrooms to increase their classroom space. The article also assert that few federal laws currently protect students from such threats but several states have adopted measures that address these issues. Some federal agencies do, however, have voluntary programs that school administrators can take advantage of to improve the condition of their facilities. (EVH)

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Learning the Hard Way

The Poor Environment of America's Schools

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Learning the Hard Way

The Poor Environment of America's Schools

Teachers at a Fairfield, Connecticut, grade school used to joke about working under tropical rain forest conditions. Built on wetlands, McKinley Elementary had suffered chronic leaky ceilings and soggy carpets since the early 1990s, problems that outstripped the pace of attempted repairs. But the mold that kept colonizing the school's walls and corridors proved no laughing matter. For several years, scores of students and teachers experienced problems ranging from asthma to sinus infections to dizziness and tremors. After concerned teachers called in federal health inspectors from the Occupational Safety and Health Administration (OSHA), the school was finally closed in October 2000. Inspectors had detected spores from at least eight varieties of mold, including *Stachybotrys*, which has been linked to serious illness and even death. Shortly thereafter, a private consulting group determined the building was unsalvageable. The district now must foot the bill to raze the building and replace it with a new $21 million facility.

"The building impacted the health of 40% of the students and teachers," estimates John Santilli, chief of allergy and immunology at the nearby St. Vincent's Medical Center in Bridgeport, who treated many of the afflicted pupils and staff over the years. At least one teacher who was heavily exposed is on permanent disability, and others experienced breast cancers and miscarriages that Santilli says might be linked to exposure to secondary mold metabolites called mycotoxins, but more study is needed. "There's a dearth of research on the impact of indoor pollutants on human health and especially on children," he says.

McKinley is not an isolated case. Experts contend that thousands of schools nationwide harbor environmental threats that may be placing students, teachers, and staff

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at risk. In addition to toxic molds, such threats may include indoor air pollution, exposure to pesticides, effects of overcrowding including disease transmission, exposure to toxic chemicals from building materials, noise pollution, and the hazards of old and crumbling school infrastructure.

More than 14 million (almost half of U.S. children) attend schools with an environmental problem, according to a landmark 1995 General Accounting Office (GAO) report entitled *School Facilities: Condition of America's Schools.* Subsequent reports by educational advocacy groups support the findings. "Basically, almost no improvements have been made since then," says Claire Barnett, director of the Healthy Schools Network, a national advocacy group based in New York. Says Barnett, who also serves on the U.S. Environmental Protection Agency's (EPA) Office of Children's Health Protection federal advisory committee, "There is no oversight from the federal level and little oversight of such issues in any of the states. Schools are very local." She continues, "Environmental health in schools is an orphan issue. The federal government has to take more of a leadership role at all different levels: research and surveillance, guidelines for maintenance and repairs, and new construction."

Indoor Air Quality

Experts estimate that children spend about 85% of their time indoors including about 7 hours per day in school. Poor indoor air quality is the most prevalent environmental hazard in schools. In fact, 30–40% of schools have poor indoor air quality, according to the GAO report. The threats include exposure to molds and toxic fungi, pesticides, and volatile organic chemicals emitted from cleaning products, photocopiers, and classroom furnishings. Radon gas and other outdoor pollutants also can enter school buildings. And airborne asbestos from insulation and lead released from paints and other building materials during renovation or repair can pose threats to health. Faulty heating, ventilation, and air conditioning (HVAC) systems only exacerbate air quality problems.

So-called "sick building syndrome," a compilation of unexplainable symptoms including headaches, nervous system effects, respiratory problems, and others, is also a concern for schoolchildren. School nurses routinely hear complaints of such symptoms from children. The syndrome, first formally identified by the World Health Organization in 1983, became prevalent with the advent in the 1970s of modern, airtight buildings designed to conserve energy.

Poor indoor air quality affects student performance of mental tasks involving concentration, calculations, and memory, and thus academic achievement, studies reveal. For example, the EPA Indoor Air Quality (IAQ) and Student Performance Web site summarizes a 1996 European study of 800 students from eight different schools, published in *Indoor Air '96. The Seventh International Conference on Indoor Air Quality and Climate.* In the study, carbon dioxide measurements were taken in the classrooms, and students were given a health symptom questionnaire. A computer program scored students' ability to concentrate. Carbon dioxide itself is not a health threat at levels found indoors, but since the main source of carbon dioxide in buildings is exhaled breath, carbon dioxide levels in classrooms are an indication of low ventilation rates and, therefore, high levels of pollution. In classrooms where carbon dioxide levels were high (low ventilation rates), student scores on the concentration tests were low; and their health symptom responses were high. The results were statistically significant and tend to confirm that with indoor air quality management, including source control and adequate ventilation, student performance can improve.

Hitting a ceiling on learning? Molding ceiling tiles, an example of decaying school infrastructure, may contribute dangerous toxins to school indoor air.

Epidemiologists believe polluted indoor air increases the rates of allergies, asthma, and infectious and respiratory diseases. A June 1998 study by the Central New York Occupational Health Clinical Center entitled Health and Safety at School reported that teachers were the fifth most common occupational group seen by doctors over the nine-year history of the clinic. Educational settings were the second most common type of worksite reported by the clinic's patients. According to the study, more than 80% of the patients that worked in school environments were diagnosed with respiratory illness. According to a 1995 report *Asthma in America,* published by Mikalix and Company in Waltham, Massachusetts, schools and childcare facilities may be home to many common asthma triggers including indoor air pollution. According to an article in the March 1992 issue of the *American Journal of Public Health,* asthma is the number one cause of school absences attributed to chronic illnesses, leading to an average of 4.6 school days missed annually.

Crumbling Schools and Packed Classrooms

Buildings that are not well maintained can contribute to poor environmental conditions, and the nation's crumbling school infrastructure is a prime example. About one-third of school buildings require major repairs or out-and-out replacement, according to a 2000 report by the National Education Association (NEA) entitled *Modernizing Our Schools: What Will It Cost?* On average, the nation's public schools are more than 40 years old, which means more and more will need repairs in the next decade. More than $320 billion will be needed to bring schools up to standard nationwide, estimates the NEA report. The figure includes $268 billion for infrastructure and the remainder for technology upgrades. Rural schools often have more environmental problems, according to another recent report by the National Center for Education Statistics entitled *Conditions of America's Public School Facilities: 1999.* Funding is the main barrier to upgrades, the report found.

Last winter, Congress passed the Healthy and High Performance Schools Act, which

Christopher G. Knight/Reuters

directs the Department of Education (ED) to study the effects of decayed schools on child health and learning and to set up a program to help states create buildings that are healthier and more energy efficient. The legislation is unprecedented. "It brings child environmental health issues to the Department of Education for the first time and opens the door for more conversations," says Barnett, who led the national campaign for passage. However, the ED has yet to act because the House of Representatives stripped the program's funding from the law.

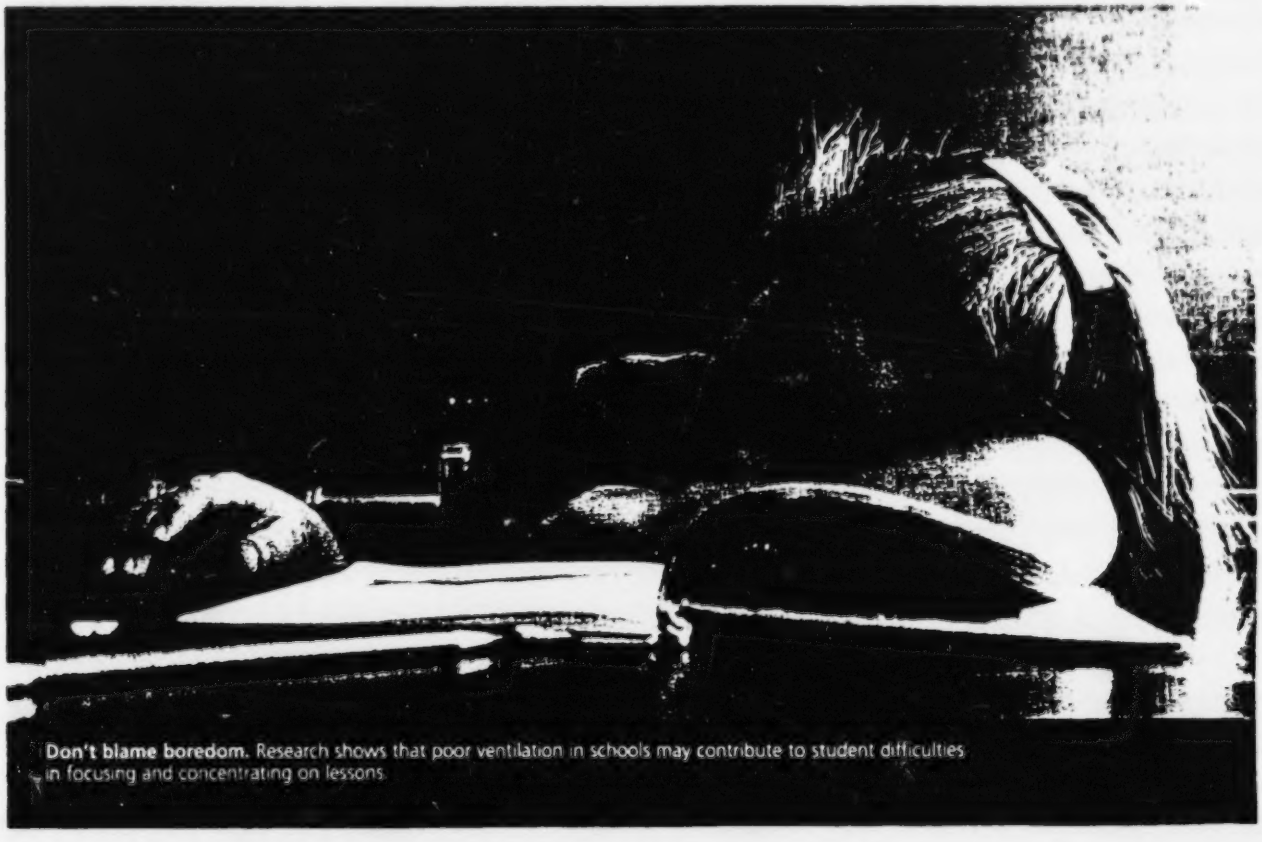
In 2000, recognizing that schools suffer from an epidemic of indoor air pollution, Congress appropriated $1.2 billion for health and safety grants for emergency renovations in schools. However, the Bush administration has thus far failed to renew the federal repair funding program in its budget requests to Congress.

Where schools are sited, of course, can influence their exposure to environmental threats. Unfortunately, hundreds of thousands of U.S. schoolchildren attend schools that were built within a half-mile radius of a known contaminated site. Such proximity puts them at increased risk for developing diseases linked to environmental pollutants such as asthma, cancer, and learning disorders, according to a report entitled *Creating Safe Learning Zones: Invisible Threats, Visible Actions*, released in January by the Child Proofing Our Communities Campaign, coordinated by the Center for Health, Environment, and Justice in Falls Church, Virginia. The study looked at Superfund and other contaminated sites in five states: California, Massachusetts, Michigan, New Jersey, and New York. It found that more than 1,100 public schools are built within a half-mile radius of such a site, exposing more than 600,000 students to potential hazards. It suggests that thousands more schools in other states are likely putting other students at risk.

Although the study found no direct link between school location and disease, it notes the increase in such problems nationally. For example, the study notes a dramatic rise in the number of children afflicted with asthma, cancer, learning disabilities, attention deficit hyperactivity disorder (ADHD), and autism nationally. Autism cases, for one, may have doubled between 1987 and 1990. Asthma afflicts 8.6 million U.S. children under age 18, according to the American Lung Association. And the National Cancer Institute reports sharp increases in cases of childhood cancer between 1973 and 1995. The jury is still out on whether exposure to chemicals may cause disorders such as autism and ADHD. Currently, the Agency for Toxic Substances and Disease Research is studying the issue of siting schools near hazardous waste sites.

New schools continue to be built near such sites because such land is cheap and available. By 2003, 2,400 new schools are expected to be completed to meet needs of the growing population, the NEA estimates. "If action isn't taken immediately, these new schools will continue to be built without guidelines to protect children against chemical exposures," says Lois Gibbs, executive director of the Center for Health, Environment and Justice. Gibbs founded the center two decades ago after leading a public awareness campaign about nuclear hazards near Love Canal in Niagara Falls, New York.

A lack of sufficient numbers of schools leads to overcrowded classrooms, a situation that only adds to the problem. Most schools have quadruple the number of people per square foot as most offices, the NEA reports. And aside from prisons, schools are the most densely populated institutions in the United States. There's a clear relation between classroom density and communicable diseases.



Don't blame boredom. Research shows that poor ventilation in schools may contribute to student difficulties in focusing and concentrating on lessons.

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asserts Darryl Alexander, associate director of Occupational Environmental Health with the American Federation of Teachers. "There's more outbreaks of [tuberculosis in schools] than in any other community," she says.

Rapid growth in various areas of the United States has led to the increased use of portable classrooms as a solution to overcrowding. Some 85,000 portable classrooms are currently in use in California. They are also increasingly popular in Sunbelt communities experiencing rapid growth. For example, the structures were a big issue during the last gubernatorial race in Florida. Often they are introduced as a stop-gap measure, but construction of permanent classrooms often ends up being delayed for decades thanks to tight education budgets.

Portable pollution. Portable classrooms, the answer to school overcrowding in many states, have been shown to emit potentially dangerous chemicals including formaldehyde and benzene.

Such modular classroom units, however, are often built from hazardous materials and have poor ventilation, asserts a study by the Environmental Working Group (EWG), a nonprofit environmental research organization based in Washington, DC. The study, published on the organization's Web site, calculated that long-term exposure to formaldehyde, benzene, and other chemicals emitted by such portables could increase a child's lifetime risk of developing cancer by a factor of two.

Last year in California, a settlement was reached between As You Sow, a San Francisco–based environmental group, and 14 manufacturers and distributors of modular buildings. As part of the settlement, the industry will substitute a less-toxic formulation of formaldehyde used in particle board and plywood in the rooms, improve ventilation, and use formaldehyde-free adhesives, among other things.

Although the industry admitted no wrongdoing in the settlement, other studies by As You Sow and others have found potentially harmful levels of toxic chemicals in the air in portable classrooms. "There is something to these reports rather than some imaginary mass hysteria," says Bill Walker, California director of the EWG.

"We'd like to find ways to phase out formaldehyde altogether," says Larry Fahn, As You Sow's executive director. Wood products that use phenol formaldehyde still emit some of the chemical into the air but much less than the more commonly used urea formaldehyde. Fahn worries that portable classrooms in other regions of the country may still contain wood treated with the urea formulation because other states don't have as stringent laws as California's Proposition 65, which mandates warning labels on all products containing cancer-causing or harmful chemicals.

Researchers at the Lawrence Berkeley National Laboratory and the UCLA School of Public Health are developing tools to assess exposures in portable classrooms in children 5–9 years old. In the UCLA Portable Classroom Study, researchers are examining 20 classrooms in seven Los Angeles area schools. About two-thirds are portable.

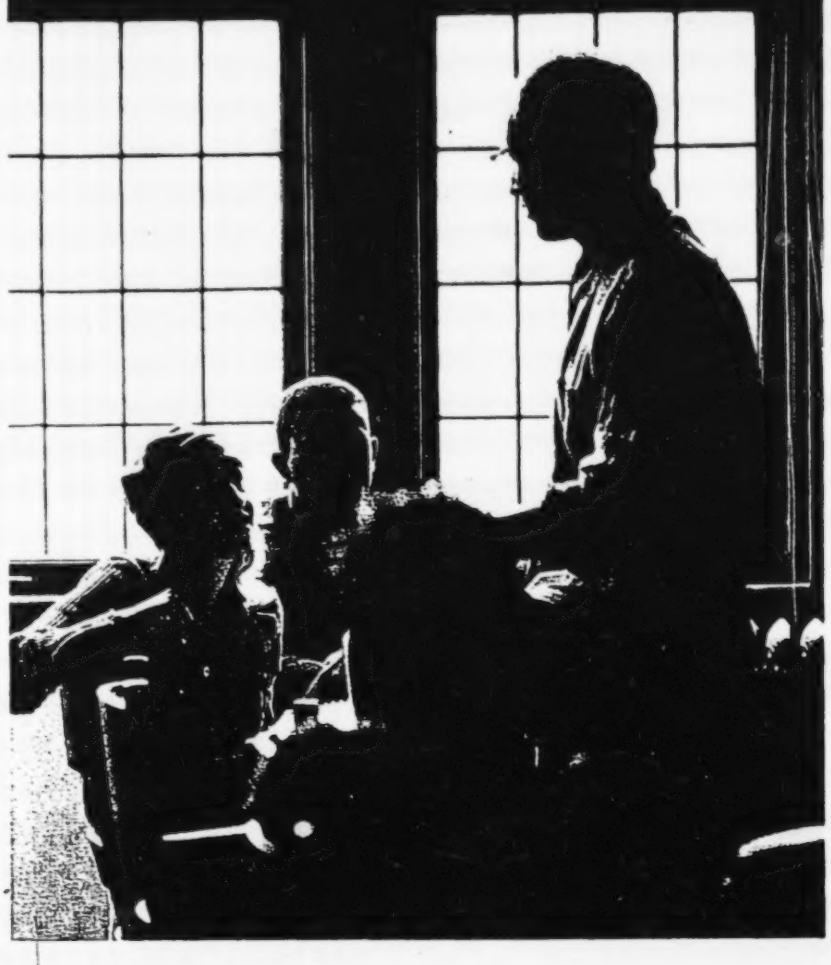
"There's a relative dearth of information about schools in general," says senior research associate Derek Shendell. The team is looking at everything from indoor air temperature and relative humidity and air exchange rates, to emissions of such volatile organic compounds as formaldehyde and acetaldehyde, to new types of HVAC systems. Preliminary results reveal that the upkeep of HVAC systems can be just as important as their quality. "It's not that the current technology is the problem," Shendell says, "it's how that technology is being operated and maintained over time." The researchers are also finding that human factors play a role. Anecdotally, teachers often turn off the ventilation systems because of the noise, Shendell says.

Noise and Lighting

Noise is another form of classroom pollution. Recent findings presented at the Acoustical Society of America meeting this past December by University of Florida at Gainesville researchers showed that noisy classrooms severely hamper students' ability to learn. In Florida elementary, middle, and high schools, a team led by architect professor Gary Seibein and Carl Crandell, a communications sciences and disorders professor, found that background noise levels average about 50 decibels. Although a normal speaking voice registers at about 60 decibels, students typically have a difficult time hearing once background levels reach 50 decibels. In the study, students positioned more than 12 feet from a teacher heard half or less of the lecture. Noise may also contribute to voice disorders among teachers, who experience higher rates of such problems than the general population. "I believe it's because teachers have to scream over the noise," Alexander says.

Previous studies provide more evidence that noise may impair learning. For example, a 1975 study at a school near railroad tracks found children who spent six years in classrooms closest to the tracks were an entire year behind children whose rooms were furthest from the tracks. A 1993 study by Cornell University researcher Gary Evans, published in *Children's Environments*, determined that children exposed to noise experienced assorted health and learning difficulties compared with unexposed children. Elevated blood pressure, trouble with word discrimination, learned helplessness, and cognitive developmental delays were observed. [See *EHP* 105:1300–1301]

Christopher G. Reuther/EHP



Just say "Shhh!". High levels of noise have been shown to contribute to learning difficulties such as trouble with word discrimination, learned helplessness, and cognitive delays. Meanwhile, new information suggests that use of natural light in classrooms may significantly improve test scores and student behavior.

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In 2003, a federal noise standard for classrooms of 35 decibels and 0.6 second reverberation—the length of time a sound lingers in a room after a noise stops—is slated to go into effect. The Federal Access Board, which creates regulations under the Americans With Disabilities Act, is reviewing the standard now. Only central air-conditioning units are quiet enough to meet the standard.

On the basis of virtual classroom modeling, Crandell and Siebein recommend square rooms with ceilings less than 10 feet high to minimize noise. In addition, the square footage of total absorbent material (acoustical ceiling tiles or wall panels) should equal the total area of a room for maximum noise reduction, they say. Shendell and his team, meanwhile, are testing prototype HVAC units that are not only quieter but also more efficient at particulate filtration than are conventional systems.

In addition to noise, research has also shown that there is a significant effect of poor lighting on children's ability to learn. Sunlight is important for human health. Children who spend large amounts of time in artificial lighting may be missing out on some of sunlight's benefits.

Case studies reported by the Healthy Schools Network in a fact sheet on school lighting show the benefits of "daylighting," or creating classrooms with "full-spectrum lighting." For example, a two-year study of six schools in Johnston County, North Carolina, compared children attending schools with full-spectrum light with those attending traditionally lit classrooms. Students in full-spectrum light were healthier overall and attended school 3.2 to 3.8 days more per year. They also exhibited more positive moods. The study also showed that libraries with superior light had significantly lower noise levels. A study of students in Capistrano School District in Orange County, California showed that students in classrooms with the most natural light progressed 20% faster on math tests and 26% faster on reading tests in one year than those with the least amount of daylight.

Another benefit of daylighting is increased energy efficiency of schools and thus, significant cost savings—that can be used for other school needs—and reduced environmental impact.

Pesticides

Pesticide exposure in schools is a national concern to parents and school administrators alike. Surveys indicate a majority of schools in most states still use pesticides that are known to cause cancer or adversely effect the nervous, hormone, or reproductive systems

in and around school buildings. For example, 93% of 46 California school districts recently surveyed used pesticides and 87% use hazardous formulations with known health effects. Hope for better national protections for students from pesticides in schools was dashed in May when Congress, after a several year drive by advocates, tabled the School Environmental Protection Act, which would have supported efforts to put so-called best practices like integrated pest management programs in place. "Teachers and school staff deserve the basic health and safety protections that this right-to-know and pest management measure would provide," says Jay Feldman, executive director of the national advocacy group Beyond Pesticides. As it stands, there are no federal requirements for schools to reduce children's school-based exposures to pesticides.

Only four states: Maryland, Massachusetts, Michigan, and Pennsylvania, have laws on the books that cover the three key aspects of pesticide protection: posting, notifications, and integrated pest management (IPM). Thirty-one states have adopted pesticide laws that cover at least one such element, according to a survey by Beyond Pesticides entitled *The Schooling of State Pesticide Laws 2002 Update*.

Even in states where laws have been passed, compliance often falls short. In 2000, the EWG reported that several million pounds of the pesticide methyl bromide were still being applied annually near schools in California despite a 1989 law to protect citizens. Since then, California has passed the Healthy Schools Act that requires schools to report to parents in writing what chemicals are used to kill pests, but the law does not ban pesticides in schools. Many schools have adopted IPM to discourage routine use of pesticides, and to use the least toxic method whenever possible. In Maryland, for instance, 17 of 17 school districts surveyed adopted IPM policies.

Playing with pesticides. A growing national movement is targeting the use of dangerous pesticides in and around schools.

Policy Gaps at the Local Level

Cracks in the system to protect environmental health in schools were underscored in the aftermath of the terrorist attacks on the World Trade Center. Seven public schools located just blocks from the World Trade Center disaster area were evacuated and temporarily relocated, including Stuyvesant High School and Special Education School. When the students could safely move back and how the environments would be monitored proved highly contentious. Some 3,000 students were moved back into the Stuyvesant facility as early as 9 October. But the school was just 60 feet from the barge operation where trucks were dumping wreckage for transfer to the Fresh Kills landfill on Staten Island. Large levels of dust infiltrated the school. Dozens of students and teachers experienced problems ranging from rashes to respiratory ailments. More than 50 members of the teachers' local union filed a grievance on the issue.

"They were the canaries in the coal mine," says research consultant Sarah Bartlett of the Stuyvesant students. "What happened at Stuyvesant shook up the other parent communities," she says, which decided not to move students back until January or February 2002. "The children became political tools to make it seem like things were normal downtown," Bartlett says. But there was little information available about the nature of the dust and no tracking of students' health complaints. "A lot of people wish they hadn't moved the students back," she says.

The attacks called attention to the fact that indoor air quality is a bigger issue for urban schools then was previously understood, Bartlett says. New York City has spent roughly $10 million to retrofit the air filtration systems of the schools affected by the September 11 attacks. The effects of September 11 also highlight the lack of a national tracking system of environmental problems in schools. "There's no tracking of pupil injury or illness at schools or efforts to compile such information on a national or statewide basis," Barnett says. "There isn't a system in place even to report mold contamination or chemical exposures. Given the times we're living in, it's a little unsettling."

For example, the spreading outbreak of unexplained rashes on students at schools in more than 20 states and parts of Canada that began before September 11 remains much of a mystery, despite the fact that the Centers for Disease Control and Prevention has launched an investigation, Barnett says. "Inadequate local reporting of cases hasn't helped matters," she says. "There is also no baseline against which a rash outbreak could be measured."

Even with improved legislation at the federal or the state level, much of the responsibility for improving school environmental conditions would still fall to local governments. And local political bodies have their limitations, critics contend. "By and large, school districts are not the best building owners in the world," Alexander says. "Whenever they're in a bind financially, they raid funds from the maintenance budget without understanding the implications for occupants."

Such was the case in Connecticut at the McKinley School, where the mold eventually overtook the building. "It's a situation where the board of education didn't get the significance of the problem," says Santilli. "They pooh-poohed it."

By the same token, local politics can tie administrators' hands. "If you look at bond issues that get defeated, you can see the predicament administrators are put into," Alexander says. Schools are also affected by liability and disclosure issues, says Michele Hodak, senior project coordinator for indoor air quality for the NEA's Health Information Network. "People are afraid of negative publicity. But if there is a problem and nothing is done about it, kids, staff, and teachers may be put at greater risk," she says. "A small hazard can become a much bigger issue and even more expensive to fix." Says Alexander, "There are too many incentives built into school boards and districts [to deny environmental problems]."

Few Federal Fixes

Even though close to 20% of the nation passes its days inside schools, no specific federal laws protect students and teachers from harmful environmental conditions in or surrounding their schools. In short, no nationwide laws target indoor air quality, pesticide use near schools, or how close schools and hazardous sites can be located to each other, despite the fact that assorted federal education, research, and grant programs target such issues.

PhotoDisc

OSHA standards and regulations, which cover adults in certain portions of the workplace, offer some environmental protections to teachers and staff such as the ability to call in a health inspector to investigate a serious exposure. But the standards and regulations don't pertain to children. Moreover, it's an unusual occasion when exposure levels in an office building or school would approach those spelled out in the regulations, which were designed in the early 1970s for industrial settings, according to OSHA.

Staff, teachers, or administrators may also request an investigation of an indoor environmental exposure or incident from the Health Hazard Evaluation Program of the National Institute for Occupational Safety and Health (NIOSH), which sets guidelines relating to indoor air quality. The program receives 450 requests a year, half of which result in site visits, a small fraction of which are at schools. "We always look at ventilation as a key component as well as comfort parameters," says Gregory Burr, a certified industrial hygienist at NIOSH. Often problems can be addressed over the phone based on experience from previous cases. "Usually, it's not just a single factor that's causing a problem," Burr says. "The answers aren't always black and white."

School advocates contend that there needs to be a parallel outlet to NIOSH for students. "There's nowhere to go and complain when kids are being exposed to awful conditions," Barnett says. "There's no way of getting any immediate attention or investigation." One state, Maine, has moved to give students employee status under the regulations. Still, asserts Alexander, "Kids are in a total vacuum. Teachers and staff are in a partial vacuum. None of the federal agencies are doing enough."

Existing federal laws are probably the toughest on asbestos. Under the federal Asbestos Management Emergency Response Act, schools are required to have an asbestos management plan and pass an inspection every three years. In about half of states, the federal regulation is enforced at the state level, according to the EPA's Asbestos Ombudsman Office. There are no federal laws on the books requires testing for lead or lead abatement in schools.

A leading obstacle to passing broader legislation is a dearth of research on how indoor pollutants affect human health. Much work remains to establish solid links between an agent and an illness, and to unravel what makes individuals susceptible to exposures. Meanwhile, advocates believe that children, in particular, may be more susceptible to environmental hazards than are adults. How much more so remains unknown. "It's clear children are uniquely vulnerable," Barnett says. "But what does that mean when you're inside a building?"

There has been significant legislative activity at the state level recently, however. More than 12 states, including Maine, Minnesota, New York, and California, have adopted new policies or regulations that address indoor air quality in schools. "There is a momentum out there at the state level," Alexander says.

Most of the laws were recently put on the books and are in the early stages of implementation, according to an Environmental Law Institute (ELI) report released earlier this year entitled *Healthier Schools: A Review of State Policy for Improving Indoor Air Quality*. "States have a pretty big role to play," says Tobie Bernstein, a senior ELI attorney who authored the report. "There's a need for more attention to be paid to this subject throughout the country."

Stepping Up to the Board

The EPA does provide guidance for schools, however. It produced an indoor air quality "Tools for Schools" kit that includes a guidebook, a CD-ROM, checklists for school employees, a fact sheet, a problem-solving information wheel, and sample policies and memos.

"We still get a lot done in a voluntary fashion," says Mary Smith, director of the EPA's Indoor Environments Division. She estimates that 9,000 of the nation's 110,000 schools have implemented some sort of indoor air quality policy in recent years thanks to the EPA's outreach efforts. Her division will conduct a survey this summer to better gauge the impact of its efforts in this area.

Anecdotal evidence reveals that indoor air quality policies are working. In the Little Harbour school in Portsmouth, New Hampshire, for example, school nurse Priscilla Santiago reported to Smith a dramatic decrease in visits to her office and absenteeism after the EPA's "Tools for Schools" program was implemented.

Many school districts, such as those in Maryland's Montgomery County and California's Los Angeles County, have implemented indoor air quality management plans. Two years ago, the Montgomery County district added a preventive maintenance team that has systematically been assessing school buildings one by one. Night crews complete preventive maintenance and ensure that schools are maintained at the improved level. So far, the team has assessed roughly 40 of 198 schools in the district, according to Barry J. Hemler, the program's environmental safety coordinator. The $2 million annual price tag is affordable at less than 0.02% of the district's overall budget, Hemler says. "It still is enough to make a measurable difference."

Moreover, the efforts of a federal interagency task force on child environmental health co-chaired by the EPA and the Department of Health and Human Services is addressing issues related to asthma, indoor air, and school environments, and will bring the resources of these agencies to bear on such problems, as well as better coordinate existing programs.

The EPA also puts out supporting literature and videos on related topics ranging from asthma to mold. For example, in addition to putting together the "Tools for Schools" kit, the EPA teamed up with the cast and crew of the TV show *This Old House* to create a video on how to properly operate and maintain school ventilation systems. They are currently working on "Tools for New Schools," a kit which will detail how to design a new school to be more environmentally friendly.

Besides sponsoring annual indoor air quality symposiums and awards, the EPA also has other initiatives underway to enhance environmental health in schools. For example, its "Buy Clean" program strives to encourage schools to purchase and test environmentally preferable products for cleaning, use in science labs, art classes, and so forth. Currently, the program is supporting pilot grants in 13 schools nationwide and is developing case studies for use by other schools. A "Buy Clean" Web site and brochure will be also be available, according to Cathy Fehrenbacher, chief of the EPA's exposure assessment branch.

Even some advocates acknowledge that federal regulations would not necessarily prove a panacea for environmental health in schools. "It is a difficult thing to regulate because one school may have a pesticide application problem while another has a ventilation issue," Smith says. Regional variables include everything from climate to the number of kids in classrooms. But, she says, getting best practices in place is a chief policy goal.

Until stronger federal protections are passed, the lion's share of the burden to safeguard children from environmental hazards in schools will continue to fall on local shoulders. Children's advocates contend that it is up to state and local administrators, teachers, students, and parents to protect school environments, and to get the most from federal resources and agencies that are moving to address the issue.

Julie Wakefield

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